



**Shillbrook House, Bridge Street, Shilton,
Oxfordshire OX18 4AB**

Protected Species Survey Report

September 2022

on behalf of Mr & Mrs Berisford

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Client	Mr & Mrs Berisford
Job name	Shillbrook House, Bridge Street, Shilton, Oxfordshire OX18 4AB
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	Signed	Name	Position	Date
Prepared by		Reuben Hayden MSc	Senior Ecologist	07/09/2022
Reviewed by		Tracy Gray BSc (Hons)	Principal Ecologist	08/09/2022

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1 Introduction

1.1 Site Description & Context

Shillbrook House is located to the western side of Bridge Street in the village of Shilton in Oxfordshire OX18 4AB. The focus of this study is a detached garage building to the south-western side of the dwelling, located at approximate Ordnance Survey grid reference SP 2677 0869.

The garage building is arranged over a single-storey and is of stone and concrete blockwork construction. There are three pitches to the roof, two to the northern side and one to the southern side of the building. There are two sets of garage doors to the eastern elevation and the pitched roofs have a covering of concrete tiles. There are no loft spaces within the building.

The garage building is detached but located very close to the south-western side of the dwelling, within an area of gravelled hard-standing. To the south are the gardens of the property. The property is located close to the edge of the village, but is surrounded on all sides by other dwellings and their gardens.

The Shill Brook is located 10m to the north-east of the property, at its nearest point. The brook is a significant ecological feature within the wider landscape and is likely to function as a habitat corridor for bat species. The wider landscape is largely agricultural, and significant areas of woodland habitat tend to be scarce. However, hedgerows, tree lined lanes and small woodlands are likely to offer some foraging and dispersal habitat to commoner bat species.

1.2 Proposed Works

There is a proposal to convert part of the garage building into a kitchen and to re-arrange the pitched roof line. The new kitchen will be attached to the dwelling via a link extension.

1.3 Aims of Study

The aims of this study are to survey the garage building for bats and/or evidence of bats, and other protected species including nesting birds such as the barn owl *Tyto alba*. The study also assesses the overall potential of the building to support roosting bats and other protected species. The report discusses the potential impacts of the proposed works on bats, other protected species and their habitats.

The report makes recommendations for appropriate mitigation, compensation and enhancement measures, and the potential impacts are assessed in accordance with the legal protection afforded to bats under The Conservation of Habitats & Species Regulations 2017. The need for a European Protected Species (Bat) Licence is also discussed in light of the impact assessment.

1.4 Bat Ecology

Bats are the only mammals to have developed the ability of true flight. At present, over 1,100 species of bat are recognised worldwide, making bats the second largest mammal group after rodents. As well as flight, bats have evolved a system of navigation and orientation using echolocation which has allowed many species to become nocturnal. There are 18 species of bat that occur within the British Isles, of which 17 are known to breed here. More species occur in the south and west of the country, with species numbers declining towards the north and into Scotland.

All bat species in the UK are nocturnal and feed exclusively on insects (they are insectivorous) which they catch in flight during their night-time activity, using echolocation to locate and

home-in on their prey. Bats will roost during the daytime and seek out dark, enclosed and undisturbed places in which to do so, often using a variety of roosting sites within their home range. Different roost sites are used for different purposes (such as mating, giving birth and hibernation) and at different periods of a bat's life cycle.

During the summer, female bats will gather together in a maternity or breeding roost. In the UK, this starts to occur towards the end of May and the females will seek out a warm and undisturbed site in which to give birth. Because maternity roosts require a particular set of environmental attributes (such as location, temperature, orientation and size), breeding bats tend to return to roost and breed in the same locations year after year. Given that bats live a relatively long time (anywhere from 10-20 years), and only give birth to one pup a year, maternity colonies are crucial to the reproduction and survival of the local population and can be very sensitive to environmental change.

Relatively little is known about hibernation roosts, as tracking and locating hibernating bats is very difficult. However, many species (particularly those within the genera *Myotis* and *Rhinolophus*) have been found within underground sites such as caves, mines and cellars, where the temperature remains constant and low throughout the winter allowing the bats to remain in a state of torpor. The spring and autumn are periods of transition and bats can use a number of different locations on a temporary basis, often moving between roosts as environmental conditions change and temperatures fluctuate. In the autumn, bats will mate, and it has been shown that male and female bats will gather at particular locations (such as a building, cave or tree) to meet, socialise and copulate.

Bats choose to roost in a number of different locations, depending on the species, their activity pattern and the period of their lifecycle. Certain species, such as the pipistrelles, favour crevices and small cavities for roosting and will use features such as cracks, crevices and small rot holes in the boughs and trunks of trees and within certain features of buildings such as boxed eaves, gaps under roof tiles, hanging tiles and soffit boards. Other species favour large, uncluttered roof spaces and lofts within buildings where they can hang up on the underside of the roof and use the interior space for flying prior to emergence. Hollow trees, cellars, caves, barns, churches and cavity walls can also all be used for roosting, given suitable access. Certain species, such as the noctule, favour roosting sites within trees whilst others tend to favour buildings. Roost sites may be used by only a very small number of bats, such as solitary males, or may offer shelter to tens or hundreds of bats within maternity and hibernation roost sites.

The suitability of roosting sites is also highly influenced by the location or context of a tree, building or cave. Roost sites are most often favoured when they are within close proximity to foraging habitats and where those habitats are connected to one another within the landscape by features such as hedgerows, woodlands, rivers or sunken lanes along which bats disperse and 'commute' from place to place. Suitable foraging habitats are any places where insect prey is diverse and abundant such as woodlands, ponds, lakes, rivers, scrub, hedgerows and unimproved grassland or pasture. Thus, the ecological context of a site is very important for determining if bats may be present within a roost and the potential for a roost to be present tends to be much higher within rural or village locations.

1.5 Barn Owl Ecology

Although nesting by barn owls has been recorded in every month of the year, most pairs lay eggs only in the spring. Recent studies suggest that the first eggs are generally laid in early April. However, eggs in March are now quite frequent so the main breeding season is normally quoted as March to August (inclusive). Early laying females are generally those with the best food supply. Barn owls do not build a nest, but use a shallow scrape in the previous years'

nest debris and/or the female breaks up a few recent pellets to create a soft layer for egg laying. In buildings, nests usually occupy a loft space, ledge or platform where there is a 'free-flight' route to the outside.

In Britain, the vast majority of nesting sites are in agricultural buildings, particularly old stone or brick-built barns and sheds. The buildings must have suitable, undisturbed areas for nesting and the birds must be able to fly into the buildings. The proximity of a good foraging area is also important, and the birds must have easy access to suitable foraging habitats from any nest site. The barn owl's main prey is the field vole and the favoured foraging habitat for barn owls in Britain is rough tussocky grassland containing a high density of field voles and other small mammals.

The barn owl is afforded legal protection under Schedule 1 of the Wildlife and Countryside Act 1981. This means that the species is protected from the destruction of its nests, the killing and injury of its eggs and young and from disturbance to active nest sites.

2 Methodology

2.1 Limitations on Survey Data

As with any survey undertaken on a certain date, the data presented within this report provide information at a particular point in time and present a 'snap-shot' of the ecological status of the site. Ecosystems and species behaviour/activity are dynamic and can change over time.

Whilst this report presents a characterisation and evaluation of habitat and species status at the time of the study, it should not be taken as an exhaustive representation of the ecological status of the site either at present or into the future.

2.2 Field Surveys

2.2.1 Initial Bat Survey & Preliminary Roost Assessment (PRA)

An initial bat survey (daytime building inspection) and preliminary roost assessment (PRA) were undertaken on 7th September 2022 by Edward Bodsworth MA (Cantab) PhD MCIEEM.

Dr Bodsworth holds a licence from Natural England to survey for bats within all counties of England (Natural England Level 3 and Level 4 Licence nos. 2020-45379-CLS-CLS & 2020-45382-CLS-CLS).

A detailed internal and external survey of the garage building was undertaken using a 1 million candle-power torch and close-focusing binoculars in order to look for bats and/or evidence of bats and to assess the potential of the building to support roosting bats.

The building was inspected for evidence of bats including, bat droppings, urine stains, feeding remains (such as moth wings) and characteristic fur staining around access points.

Notes were made on the relative freshness, shape and size of bat droppings and the location and quantity of any feeding remains. 'Clean' gaps and crevices within the structure of the building were looked for as this can indicate where bats may have gained access to the interior spaces and the fabric of the walls.

The bat survey was undertaken according to best practice guidelines published by the Bat Conservation Trust (Collins, 2016).

The study also takes into account the structure and ecological context of the building, including the following factors which may increase the likelihood of roosting bats being present:

- Age of the building (pre-20th Century or early 20th Century construction)
- Nature of construction; traditional brick, stone or timber construction
- Large and complicated roof void with unobstructed flying spaces
- Large (>20 cm) roof timbers with mortice/tenon joints, cracks and holes
- Entrances and gaps for bats to fly and crawl through
- Poorly maintained fabric providing ready access points for bats into roofs, walls; but at the same time not being too draughty and cool.
- Roof warmed by the sun, south-facing roofs in particular
- Weatherboarding and/or hanging tiles with gaps
- Undisturbed roof voids
- Buildings and built structures in proximity to each other providing a variety of roosting opportunities throughout the year
- Buildings or built structures close to good foraging habitat, in particular mature trees, parkland, woodland or wetland, especially in a rural setting.

The following criteria are used for as guidelines for assessing the potential suitability of buildings for bats (Collins, 2016):

Suitability	Description of Roosting Habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after the presence is confirmed).
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitats.

Confirmed presence of roosting bats is where evidence indicates that a building or other structure is used by bats, this includes:

- bats seen roosting or observed flying from a roost or freely in the habitat;
- droppings, carcasses, feeding remains etc. found and/or
- bats heard ‘chattering’ inside a roost on a warm day or at dusk.

Where the possibility that bats are present cannot be eliminated or evidence of bats is found during the building inspection survey, then further surveys (such as winter hibernation, presence/absence and/or roost characterisation) are likely to be necessary if impacts on the roosting habitat (or the bats using it) are predicted.

2.2.2 Nesting Bird Survey

The building was surveyed for evidence of nesting birds including active and inactive birds' nests, eggs, droppings, feathers and owl pellets.

Specific observations were made with regard to species such as house sparrow *Passer domesticus*, swallow *Hirundo rustica* and barn owl; species that are often associated with buildings.

2.2.3 Other Species

The building and surrounding habitats were assessed for their potential to offer habitat to other protected species.

3 Results

Please refer to Appendix 1 for photographs of the building. Location plans can be found within Appendix 2.

3.1 Description of Building

The garage building is arranged over a single-storey and is of stone and concrete blockwork construction. There are three pitches to the roof, two to the northern side and one to the southern side of the building. There are two sets of garage doors to the eastern elevation and the pitched roofs have a covering of concrete tiles. There are no loft spaces or enclosed roof spaces within the building.

The underside of the roof is lined with a bitumen roofing felt, and also has a plywood underlay. The building is in use for storage and is in a very good state of repair. There are no gaps within the external or internal stone walls, and the concrete blockwork is solid and intact. All roof tiles are also close-fitting and intact with no slipped, broken or missing tiles. There are no external features, such as hanging tiles or wooden boarding, that crevice-dwelling species of bat could use for shelter.

Bats will choose to roost within different locations within the summer and winter periods (see Figure 1), favouring dark, enclosed, humid and cool locations for hibernation such as caves and cellars. These locations must maintain a constant low temperature (2-8°C), but temperatures must also not go below freezing. In addition, bats favour places that are undisturbed and retain relatively high humidity during the winter period.

The building is not considered to be suitable for hibernation due to the fact that the internal spaces are unsuitable for hibernation, and the building exhibits no features that could be used by hibernating bats and is unlikely to maintain the constantly cool and humid conditions which are required by overwintering bats.

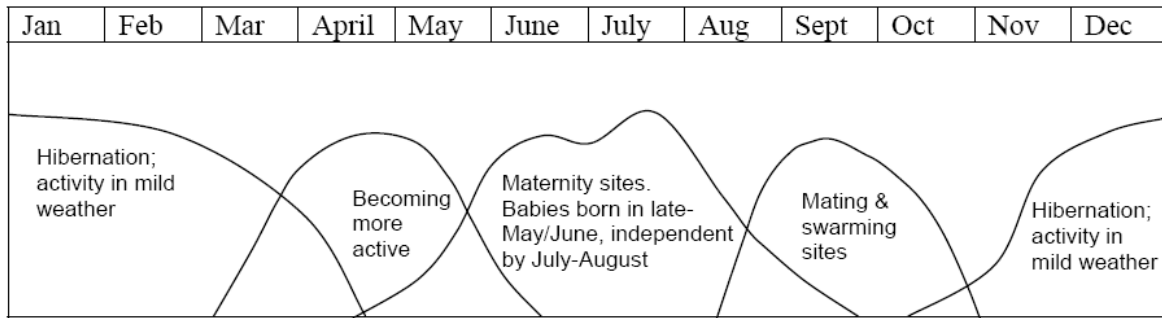


Figure 1. Diagram showing the yearly life cycle of a bat. Taken from the *Bat Mitigation Guidelines* by Mitchell-Jones (2004).

Given the above discussion, the building is assessed as having 'negligible' potential (Collins, 2016) to offer shelter to roosting bats.

3.2 Evidence of Bats

No bats or evidence of bats were found during the survey.

In particular, no bat droppings were found within the building.

3.3 Nesting Birds

No evidence of nesting birds was noted and there were no features that house sparrows could use for nesting. There is no internal access for barn owls or swallows and the building is not suitable for these species.

3.4 Other Species

No evidence of other protected or notable species was noted.

4 Discussion

4.1 Status of Bats

It is considered that roosting bats are absent from the garage building at Shillbrook House.

No bats or evidence of bats were noted, and the building is assessed as having 'negligible' potential (Collins, 2016) to provide shelter to roosting bats.

4.2 Other Species

The building is not considered to offer any suitable habitat to other protected species, including nesting birds.

4.3 Legislative Guidance

4.3.1 Bats

As with many animal species within the UK, declines in the abundance and distribution of many bat species have been documented through recent decades. The reasons for these declines are various and complex but it is considered that the major factors are changes in land use and agriculture, the loss of woodlands and hedgerows and the loss of suitable roosting sites.

Bats are particularly sensitive to human activity due to the fact that they roost within buildings, trees and underground structures such as mines, and the availability of suitable roost sites is considered to be a key factor in the conservation of bats within the UK. As a consequence, all species of bat and their roost sites are protected under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000) and under The Conservation of Habitats and Species Regulations 2017. Taken together, these make it an offence to:

- (a) Deliberately capture or intentionally take a bat
- (b) Deliberately or intentionally kill or injure a bat
- (c) To be in possession or control of any live or dead wild bat or any part of, or anything derived from a wild bat
- (d) Damage or destroy a breeding site or resting place of such an animal or intentionally or recklessly damage, destroy or obstruct access to any place that a wild bat uses for shelter or protection
- (e) Intentionally or recklessly disturb any wild bat while it is occupying a structure or place that it uses for shelter or protection
- (f) Deliberately disturb any bat, in particular any disturbance which is likely
 - to impair their ability;
 - (i) to survive, breed, reproduce or to rear or nurture their young; or
 - (ii) in the case of hibernating or migratory species, to hibernate or migrate; or
 - to affect significantly the local distribution or abundance of the species to which they belong

A bat roost may be any structure a bat uses for breeding, resting, shelter or protection. It is important to note that since bats tend to re-use the same roost sites, current legal opinion is that a bat roost is protected whether or not the bats are present at the time.

Although the law provides strict protection to bats, it also allows this protection to be set aside (derogation) under The Conservation of Habitats and Species Regulations 2017 through the issuing of licences. Where a lawful operation is required to be carried out, but which is likely to result in one of the above offences, a licence may be obtained from Natural England (the statutory body in England with responsibility for nature conservation) to allow the operation to proceed. However, in accordance with the requirements of The Conservation of Habitats and Species Regulations 2017, a licence can only be issued where the following requirements are satisfied:

- The proposal is necessary 'to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment';
- 'There is no satisfactory alternative';
- The proposals 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'.

4.3.2 *Nesting Birds*

Nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. The nesting season for most species is between March and August inclusive.

4.4 Potential Impacts

4.4.1 Bats

There is no evidence to indicate that garage building at Shillbrook House is being used as a place of shelter or protection by roosting bats, and roosting bats are considered to be absent.

As a result of this conclusion, the proposed conversion works will not result in any significant impacts on bats or the places that bats use for breeding, shelter and/or protection (roosts) and no specific compensation measures are considered necessary (Mitchell-Jones, 2004).

Since no significant impacts on bats are predicted under The Conservation of Habitats and Species Regulations 2017, a European Protected Species (bat) licence will not be required for the proposed works to proceed. Since there are no predicted impacts on bats or their habitats, it is not necessary to consider the 'three tests' of The Conservation of Habitats and Species Regulations 2017 in this instance.

4.4.2 Nesting Birds

There are no foreseeable impacts on nesting birds or other protected species .

5 Recommendations

5.1 Further Surveys

No further surveys are considered necessary.

5.2 Licensing

As previously discussed, a European Protected Species (bat) licence will not be required for the proposed works to proceed.

5.3 Timing

There are no constraints with regard to the timing of works and bats.

5.4 Careful Work Practices

Works should proceed in a careful and controlled manner. Contractors should be briefed with regard to the fact that individual bats can often exploit very small crevices as roost sites and that bats can move between roost sites on a regular basis.

In the very unlikely event that bats or significant evidence of bats (for example large accumulations of fresh bat droppings) are encountered, works should stop immediately, and advice sought from a qualified ecologist.

5.5 Enhancement

Although it is not necessary from a legal perspective, it is recommended that a bat box is erected on a mature tree within the garden of the property, if a suitable tree exists.

This could be a traditional wooden bat box, or longer-lasting woodcrete boxes (such as a Schwegler box). If a bat box is adopted, it is recommended that it be installed at least 4m above ground level on a tree with a clear trunk.

The erection of one bat box would be seen as an enhancement to the existing situation.

6 References

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7 Appendix 1. Photographs



Photograph 1. View of the garage building from the south-east.



Photograph 2. The two pitched roof sections to the northern side of the building.



Photograph 3. Detail of the internal roof structure.



Photograph 4. Detail of the internal concrete blockwork walls.

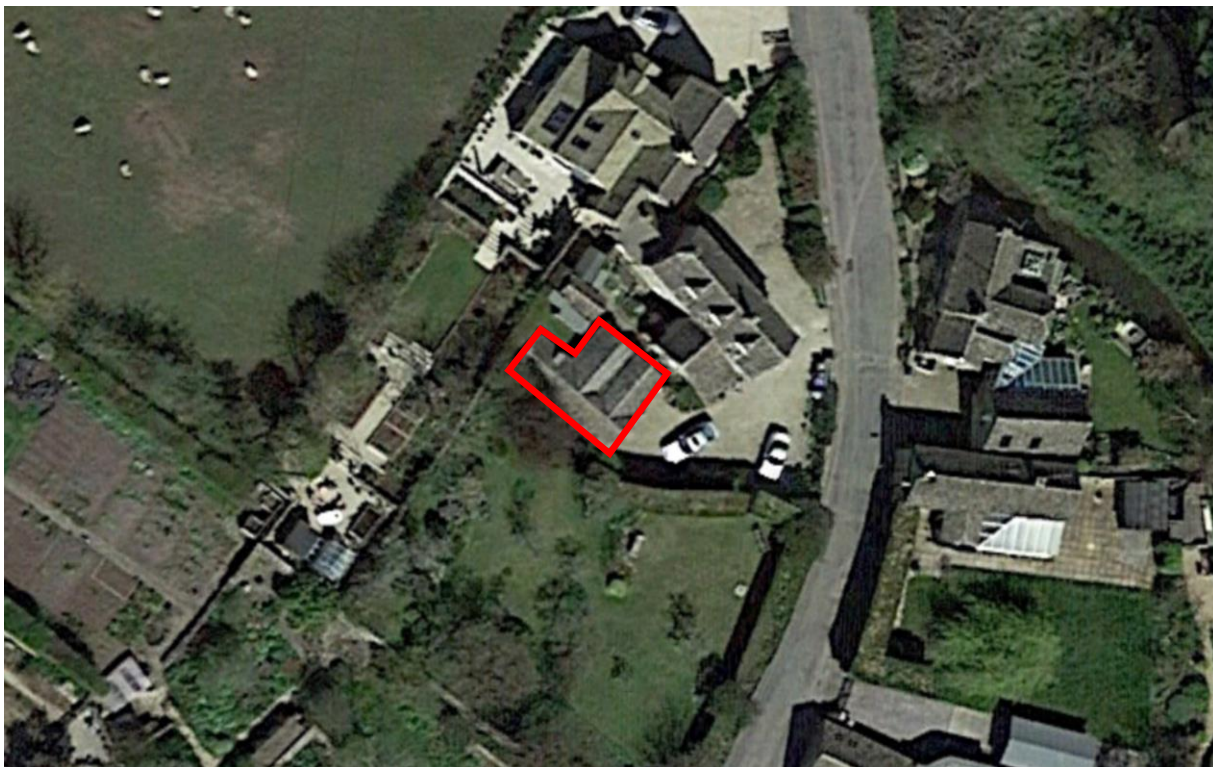


Photograph 5. Detail of the roof tiles.



Photograph 6. Detail of the external stonework.

8 Appendix 2. Site Location Plans



An aerial photograph showing the location of the garage building (outlined in red) at Shillbrook House. Source: Google Satellite



Ordnance Survey map showing the approximate location of Shillbrook House (indicated by the red arrow) within the wider local area. Source: OSM Standard